Sixth Grade Nature of Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the nature and origin of scientific knowledge.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Recognize scientific knowledge as not merely a set of static facts, but is dynamic and affords the best current explanations. Examples: flat Earth, spontaneous generation ✓ Identify important contributions to the advancement of science from people of differing cultures, genders, and ethnicity. Examples: George W. Carver-peanuts, Gregor Mendel-genetics, Sylvia Earle-oceanography, Darwin-evolution

Indicator 2: Apply the skills necessary to conduct scientific investigations.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**6.N.2.1. Students are able to pose questions that can be explored through scientific investigations.** **Example**: How does light affect plant growth? ✓ Conduct systematic scientific investigations. • Use appropriate supportive technologies. • Describe the limits of accuracy inherent in a particular measuring device or measurement procedure. • Manipulate one variable over time with many repeated trials to test a hypothesis. • Construct and interpret graphs from data to make predictions. • Use research methods to investigate practical and/or personal scientific problems and questions. ✓ Describe and demonstrate various safety factors associated

	with different types of scientific activity. • Use appropriate scientific equipment safely in all investigations. • Wear appropriate attire.

Sixth Grade Nature of Science
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • pose a question and a hypothesis that can be explored through scientific exploration.
Proficient	**Sixth grade students performing at the proficient level:** • pose questions that can be explored through scientific investigations.
Basic	**Sixth Grade students performing at the basic level:** • given a prompt, pose one question that can be scientifically explored.

Sixth Grade Physical Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Describe structures and properties of, and changes in, matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**6.P.1.1. Students are able to identify the subatomic particles that make up atoms.** • Electrons, protons, and neutrons
(Application)	**6.P.1.2. Students are able to classify matter based on physical and chemical properties.** **Examples**: mass, weight, volume, acidity, density, texture, color, melting point, boiling point ✓ Compare and contrast compounds and elements. Examples: sugar, salt, water (as compounds); Au, Fe, Na (as element symbols) ✓ Use the Periodic Table as a tool to describe elements. Examples: symbols, metals/non-metals, groups/rows, families
(Comprehension)	**6.N.1.3. Students are able to describe phase changes in matter differentiating between the particle motion in solids, liquids, and gases.**

Indicator 2: Analyze forces, their forms, and their effects on motions.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.P.2.1. Students are able to describe how push/pull forces acting on an object produce motion.** **Examples**: illustration of see-saw, sailboat on water, kite ✓ Demonstrate how all forces have magnitude and direction. ✓ Newton's Laws of Motion

Indicator 3: Analyze interactions of energy and matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.P.3.1. Students are able to identify types of energy transformations.** **Examples**: mechanical to electrical, chemical to light, kinetic to potential (and vice versa) ✓ Explain basic principles of electricity and magnetism including static, current, circuits, and magnetic fields. ✓ Investigate the properties of light (electromagnetic spectrum). ✓ Illustrate sunlight to chemical (photosynthesis).

Sixth Grade Physical Science
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • draw models of simple atoms indicating appropriate positions of protons, electrons, and neutrons; • identify physical and chemical changes; • explain the role of temperature in phase changes of matter; • predict motion(s) of an object acted on by multiple push/pull forces; • given a scenario, identify energy transformation(s).
Proficient	**Sixth grade students performing at the proficient level:** • identify the subatomic particles that make up atoms; • classify matter based on physical and chemical properties; • describe phase changes in matter differentiating between the particle motion in solids, liquids, and gases; • describe how push/pull forces acting on an object produce motion; • identify types of energy transformations.
Basic	**Sixth grade students performing at the basic level:** • label the protons, neutrons, and electrons of an atom; • classify matter based on physical property; • given an illustration of particle motion, can identify solids, liquids, and gases; • given an illustration, identify push/pull forces; • give an example of one energy transformation.

Sixth Grade Life Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.L.1.1. Students are able to illustrate the difference between plant and animal cells.** • Plant cells have chloroplasts and cell walls. ✓ Identify basic cell organelles and their functions. ✓ Recognize cells as the building blocks of living things. • Observe cells with a compound microscope.
(Comprehension)	**6.L.1.2. Students are able to explain the importance and scientific use of a classification system.** • Management of diversity for organization and categorization • Uniform scientific communication Example: identification and classification of newly-discovered organisms ✓ Kingdom, phylum, class, order, family, genus, species ✓ Kingdom classification system (monera, protista, plantae, fungi, animalia)

Indicator 2: Analyze various patterns and products of natural and induced biological change.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Investigate the lineage of organisms to predict traits and features. Examples: family genealogy, Mendel's pea plants, Punnett Squares ✓ Describe the difference between a hybrid and a purebred trait.

Indicator 3: Analyze how organisms are linked to one another and the environment.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Model cycles in ecosystems. Examples: water, carbon dioxide/oxygen ✓ Describe the relationship between characteristics of biomes and the organisms that live there. ✓ Describe how organisms adapt to biotic and abiotic factors in a biome.

Sixth Grade Life Science
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • explain the reasons for the differences between plant and animal cells; • design a classification system.
Proficient	**Sixth grade students performing at the proficient level:** • illustrate the difference between plant and animal cells; • explain the importance and scientific use of a classification system.
Basic	**Sixth grade students performing at the basic level:** • name two similarities and differences between plant and animal cells; • list the five kingdoms.

Sixth Grade Earth/Space Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze the various structures and processes of the Earth system.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.E.1.1. Students are able to describe how the spheres (lithosphere, hydrosphere, atmosphere, and biosphere) of the Earth interact.** • Impact of humans and natural events ✓ Composition of spheres
(Application)	**6.E.1.2. Students are able to examine the role of water on the Earth.** • Surface Examples: waves, glaciers, rivers • Underground Example: aquifers • Atmosphere Examples: precipitation, humidity
(Comprehension)	**6.E.1.3. Students are able to explain processes involved in the formation of the Earth's structure.** **Examples**: plate tectonics, volcanoes, earthquakes ✓ Interpret topographic and digital imagery or remotely sensed data to identify surface features. Examples: local, global, regional ✓ Explain the formation of different rock types and their characteristics. ✓ Use geospatial technologies to investigate natural phenomena. Examples: GPS, GIS, remote sensing

Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**6.E.2.1. Students are able to identify the organization and relative scale of the solar system.** • Sun, Moon, Earth, other planets and their moons, meteors, asteroids, and comets ✓ Origins and age of the universe ✓ Explain the association of time measurement with celestial motions. Examples: time zones, leap years, international dateline

Sixth Grade Earth/Space Science
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • analyze the role of water as it interacts with the Earth's spheres; • explain the role of plate tectonics in shaping the earth; • compare and contrast terrestrial and gaseous planets.
Proficient	**Sixth grade students performing at the proficient level:** • describe how the spheres (lithosphere, hydrosphere, atmosphere, and biosphere) of the Earth interact; • examine the role of water on the Earth; • explain processes involved in the formation of the Earth's structure; • identify the organization and relative scale of the solar system.
Basic	**Sixth grade students performing at the basic level:** • identify the spheres of Earth; • list two effects of water on Earth; • identify processes of weathering and erosion in the formation of earth's structures; • list the planets in order from the Sun outward.

Sixth Grade Science, Technology, Environment, and Society
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**6.S.1.1. Students are able to describe how science and technology have helped society to solve problems.** **Examples**: GPS, GIS, remote sensing, prevention and treatment of diseases, vaccinations, water treatment, prosthetics

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**6.S.2.1. Students are able, given a scenario, to identify the problem(s) of human activity on the local, regional, or global environment.** **Examples**: urban expansion, water treatment

Sixth Grade Science Technology, Environment, and Society
Performance Descriptors

Advanced	**Sixth grade students performing at the advanced level:** • list pros and cons of technological solutions to problems.
Proficient	**Sixth grade students performing at the proficient level:** • describe how science and technology have helped society to solve problems; • given a scenario, identify the problem(s) of human activity on the local, regional, or global environment.
Basic	**Sixth grade students performing at the basic level:** • recognize a problem.

Seventh Grade Nature of Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the nature and origin of scientific knowledge.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
	✓ Describe societal response to major scientific findings or theories. Examples: cloning, stem cell research, biotechnology ✓ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity. Examples: Louis Pasteur-disease, Rachel Carson-ecology, Linnaeus- classification, Redi-biology, Darwin-evolution, Jane Goodall-zoology

Indicator 2: Apply the skills necessary to conduct scientific investigations.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**7.N.2.1. Students are able to conduct scientific investigations using given procedures**. • Use appropriate supportive technologies. • Determine the limits of accuracy inherent in a particular measuring device or procedure. • Control variables to test hypotheses by repeated trials. • Identify sources of experimental error. • Interpret to make predictions and/or justify conclusions. • Use research methods to investigate practical and/or personal scientific problems and questions. ✓ Describe and demonstrate various safety factors associated with different types of scientific activity. • Demonstrate appropriate use of apparatus and technologies for investigations. • Use proper safety procedures in all investigations. • Wear appropriate attire. ✓ Analyze the benefits and potential of scientific investigations.

Seventh Grade Nature of Science
Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • design a replicable scientific investigation.
Proficient	**Seventh grade students performing at the proficient level:** • conduct scientific investigations using given procedures.
Basic	**Seventh grade students performing at the basic level:** • identify steps necessary to conduct a replicable scientific investigation.

Seventh Grade Physical Science
Grade Standards, Supporting Skills, and Examples

After careful consideration of current research and input from educators throughout the state, the Committee revised former standards to facilitate effective instruction and student mastery. Grade seven standards emphasize Life Science.

Seventh Grade Life Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Knowledge)	**7.L.1.1. Students are able to identify basic cell organelles and their functions.** • Observe cells with a compound microscope. Examples: cell membranes, cell wall, cytoplasm, vacuoles, nucleus • Describe the function of the cell membrane to include active transport and passive transport (diffusion, osmosis). • Describe cell walls as providing support and shape. • Describe cytoplasm. • Describe vacuoles. • Describe the function of the nucleus. ✓ DNA replication ✓ Protein synthesis (ribosomes) ✓ Transcription/translation ✓ Endoplasmic reticulum ✓ Lysosomes ✓ Chloroplasts role in photosynthesis ✓ Mitochondria role in respiration
(Comprehension)	**7.L.1.2. Students are able to identify and explain the function of the human systems and the organs within each system.** • Skeletal/support • Muscular • Digestive • Respiratory • Circulatory • Reproductive ✓ Endocrine

	✓ Immune ✓ Nervous ✓ Excretory ✓ Integumentary
(Application)	**7.L.1.3. Students are able to classify organisms by using the currently recognized kingdoms.** **Examples**: monera, protista, plantae, fungi, animalia ✓ Identify and compare the basic structure and function of major taxa. ✓ Describe the levels of organization within organisms. Example: cells to tissues to organs to systems to organisms
(Comprehension)	**7.L.1.4. Students are able to describe and identify the structure of vascular and non-vascular plants.** **Examples**: structures of root stems, leaves, and flowers

Indicator 2: Analyze various patterns and products of natural and induced biological change.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**7.L.2.1. Students are able to distinguish between processes involved in sexual and asexual reproduction.** • Model the process of cell division. Examples: mitosis and meiosis ✓ Identify the role of genetics in the transmission of traits and characteristics in organisms. Examples: Punnett Square, selective breeding, adaptations, natural selection, multiple traits, pedigree

Indicator 3: Analyze how organisms are linked to one another and the environment.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**7.L.3.1. Students are able to predict the effects of biotic and abiotic factors on a species' survival.** **Examples**: adaptations, genetic defects, population disturbances, over-reproduction, animal behavior, flooding, global warming, oil spills, human activity ✓ Describe processes by which matter and energy flow through an ecosystem. Examples: photosynthesis, respiration, nitrogen cycle ✓ Use geospatial technologies to investigate natural phenomena. Examples: GPS, GIS, remote sensing

Seventh Grade Life Science
Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • compare and contrast hierarchical levels within the five kingdoms; • identify organism by taxonomic level using a dichotomous key; • given the characteristics of a plant, classify it as vascular or non-vascular; • compare and contrast sexual and asexual reproduction in plants and animals.
Proficient	**Seventh grade students performing at the proficient level:** • identify basic cell organelles and their functions; • identify and explain the function of the human systems and the organs within each system; • classify organisms by using the currently recognized kingdoms; • describe and identify the structure of vascular and non-vascular plants; • distinguish between processes involved in sexual and asexual reproduction; • predict the effects of biotic and abiotic factors on a species survival.
Basic	**Seventh grade students performing at the basic level:** • label the basic cell parts using a word bank; • using a list, order the organization of organisms; • give examples and characteristics of organisms from each kingdom;

	• using a word bank, label the parts of a flower; • define sexual and asexual reproduction.

Seventh Grade Earth/Space Science
Grade Standards, Supporting Skills, and Examples

After careful consideration of current research and input from educators throughout the state, the Committee revised former standards to facilitate effective instruction and student mastery. Grade seven standards emphasize Life Science.

Seventh Grade Science, Technology, Environment, and Society
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**7.S.1.1. Students are able to describe how science and technology are used to solve problems in different professions and businesses.** **Examples**: GPS, GIS, remote sensing, agriculture and genetics, medical and bio-technology (EKG), food industry and chemistry

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**7.S.2.1. Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.** **Example**: Missouri River dams and water needs

Seventh Grade Science, Technology, Environment, and Society
Performance Descriptors

Advanced	**Seventh grade students performing at the advanced level:** • develop solutions to problems.
Proficient	**Seventh grade students performing at the proficient level:** • describe how science and technology are used to solve problems in different professions and businesses; • given a scenario, predict the consequence(s) of human activity on the local, regional, or global environment.
Basic	**Seventh grade students performing at the basic level:** • identify the problem and one possible solution.

Eighth Grade Nature of Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Understand the nature and origin of scientific knowledge.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**8.N.1.1. Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations.** • Define fact, predictions, theory, and law/principle. • Discuss how theory can become law. ✓ Evaluate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity. Examples: Marie Curie-radiation, Hess, Galileo- astronomy, Kepler-astronomy, Newton-physics, Neil Tice-astronomy, Mendeleev-physics

Indicator 2: Apply the skills necessary to conduct scientific investigations.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**8.N.2.1. Students are able to design a replicable scientific investigation.** • Use appropriate supportive technologies. • Assess the limits of accuracy inherent in a particular measuring device or procedure. • Control variables to test hypotheses by repeated trials and by identifying sources of experimental error. • Interpret data to justify predictions or conclusions. • Use research methods to investigate practical and/or personal scientific problems and questions. • Select appropriate scientific equipment and technologies for investigations and experiments. • Use proper safety procedures in all investigations. • Wear appropriate attire. ✓ Evaluate the benefits and potential of scientific investigations.

Eighth Grade Nature of Science
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • justify facts, predictions, theory, and law/principles in scientific investigations; • design and conduct a replicable scientific investigation.
Proficient	**Eighth grade students performing at the proficient level:** • differentiate among facts, predictions, theory, and law/principles in scientific investigations; • design a replicable scientific investigation.
Basic	**Eighth grade students performing at the basic level:** • define fact, prediction, and theory; • follow instructions to conduct a systematic scientific investigation.

Eighth Grade Physical Science
Grade Standards, Supporting Skills, and Examples

After careful consideration of current research and input from educators throughout the state, the Committee revised former standards to facilitate effective instruction and student mastery. Grade eight standards emphasize Earth/Space Science.

Indicator 1: Describe structures and properties of, and changes in, matter.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**8.P.1.1. Students are able to classify matter as elements, compounds, or mixtures.** **Example**: Na and Cl are elements that, chemically combined, form salt (NaCl) (compound). **Example**: Salt and water form a mixture that can be physically separated. ✓ Formulas

(Application)	**8.P.1.2. Students are able to use the Periodic Table to compare and contrast families of elements and to classify elements as metals, metalloids, or non-metals.** • Describe the relationship between the organization and the predictive nature of the Periodic Table. • Use the Bohr model to show the arrangement of the subatomic particles of atomic numbers 1 through 18. ✓ Compare and contrast other atomic models.
(Comprehension)	**8.P.1.3. Students are able to compare properties of matter resulting from physical and chemical changes.** **Examples**: weathering, burning, melting, acid rain ✓ Ionic/covalent bonding

Indicator 2: Analyze forces, their forms, and their effects on motions.

See note above.

Indicator 3: Analyze interactions of energy and matter.

See note above.

Eighth Grade Physical Science
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • create models of elements, compounds, or mixtures; • explain the predictive nature of the Periodic Table; • predict properties of matter resulting from physical and chemical changes.
Proficient	**Eighth grade students performing at the proficient level:** • classify matter as elements, compounds, or mixtures; • use the Periodic Table to compare and contrast families of elements and classify elements as metals, metalloids, non-metals; • compare properties of matter resulting from physical and chemical changes.
Basic	**Eighth grade students performing at the basic level:** • define elements, compounds, and mixtures; • use the Periodic Table to identify elements as metals, metalloids, non-metals;

	• identify physical and chemical changes.

Eighth Grade Life Science
Grade Standards, Supporting Skills, and Examples

After careful consideration of current research and input from educators throughout the state, the Committee revised former standards to facilitate effective instruction and student mastery. Grade eight standards emphasize Earth/Space Science.

Eighth Grade Earth/Space Science
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze the various structures and processes of the Earth system.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Application)	**8.E.1.1. Students are able to identify and classify minerals and rocks.** **Examples:** luster, streak, fracture/cleavage, hardness (Mohs Scale), specific gravity, color, magnetism, acid test, flame test, fluorescence • Rocks as sedimentary, igneous, or metamorphic. • Rock Cycle ✓ Law of Conservation of Energy and Matter • Minerals as carbonates (CO3) or Silicates (SiO2) √ Minerals as oxides, sulfides, halides, sulfates
(Analysis)	**8.E.1.2. Students are able to explain the role of plate tectonics in shaping Earth.** • Plates boundaries • Volcanoes • Earthquakes • Seismic waves • Mountains • Convection currents in the mantle • Changes over time Examples: adaptations, extinction, geologic time (relative and absolute), extinct species, fossils, surface features
(Analysis)	**8.E.1.3. Students are able to explain the factors that create weather and the instruments and technologies that assess it.** **Examples**: NOAA, AMS • Differentiate between climate and climate zones. Examples: air masses, fronts, pressure systems, Coriolis effect, wind systems, humidity, storms ✓ Effects of the ocean on weather

	✓ Condensation ✓ Evaporation ✓ Cloud Formation
(Application)	**8.E.1.4. Students are able to examine the chemical and physical properties of the ocean to determine causes and effects of currents and waves.** **Examples**: density, temperature, salinity ✓ El Niño ✓ Ocean zones ✓ Ocean floor features
(Analysis)	**8.E.1.5. Students are able to explain the impact of weathering and erosion on the Earth.** • Soil formation • Deposition (deltas) • Land transformations (Grand Canyon) • Glaciation ✓ Use geospatial technologies to investigate natural phenomena. Examples: GPS, GIS, remote sensing

Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Analysis)	**8.E.2.1. Students are able to compare celestial bodies within the solar system using composition, size, and orbital motion.** • Describe the composition of the Sun, the planets, asteroids, and comets. ✓ Use of spectroscopic analysis of celestial bodies ✓ Measurement in space ✓ Constellations ✓ Galaxies ✓ Life cycle of a star ✓ HR Diagram

	✓ Law of Gravitation ✓ Big Bang Theory ✓ Doppler Effect
(Analysis)	**8.E.2.2. Students are able to differentiate the influences of the relative positions of the Earth, Moon, and Sun.** • Lunar and solar eclipses, moon phases, tides, seasons

Eighth Grade Earth/Space Science
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • use classification methods, identify, and classify unknown minerals and rocks; • give evidence that supports the theory of plate tectonics; • analyze weather maps and make basic predictions; • predict the climate of a coastal region based on ocean currents; • given a scenario, predict the consequences of weathering and/or erosion; • construct a scale model of the solar system; • predict the effects on the Earth's environment if tilt, distance, or atmosphere were changed.
Proficient	**Eighth grade students performing at the proficient level:** • identify and classify minerals and rocks; • explain the role of plate tectonics in shaping Earth; • explain the factors that create weather and the instruments that assess it; • examine the chemical and physical properties of the ocean to determine causes and effects of currents and waves; • explain the impact of weathering and erosion on the earth; • compare celestial bodies within the solar system using composition, size, and orbital motion; • differentiate the influences of the relative positions of the Earth, Moon, and Sun.
Basic	**Eighth grade students performing at the basic level:** • identify rocks as sedimentary, igneous, or metamorphic; • describe activity that occurs along plate boundaries; • define basic weather vocabulary; • list a physical and chemical property of the oceans; • describe the difference between weathering and erosion; • identify the basic objects of the solar system; • describe how the tilt of the Earth is a cause of the seasons.

Eighth Grade Earth/Space Science
ELL Performance Descriptors

Proficient	**Eighth grade ELL students performing at the proficient level:** • identify minerals and rocks according to physical properties; • describe activity that occurs along plate boundaries; • define basic weather vocabulary; • list a physical and chemical property of the oceans; • describe the difference between weathering and erosion; • identify the basic objects of the solar system (planets, comets, asteroids, moons); • describe how the tilt of the Earth is a cause of the seasons; • ask questions related to science topics.
Intermediate	**Eighth grade ELL students performing at the intermediate level:** • identify rocks according to physical properties; • recognize that earthquakes occur along plate boundaries; • use basic weather vocabulary; • list a physical property of the oceans; • recognize differences between weathering and erosion; • name the basic objects of the solar system; • recognize that the Earth tilts on its axis; • give simple oral responses to questions on topics presented in class.
Basic	**Eighth grade ELL students performing at the basic level:** • recognize that physical properties identify rocks; • recognize that the Earth's crust is made up of plates; • know basic weather vocabulary; • know that the ocean has physical properties (big, made of water, plant and animal life); • name one cause of weathering or erosion; • label the Earth, Moon and Sun on a diagram; • recognize that the Earth tilts; • participate in science activities and experiments with other students; • use correct pronunciation of science words; • respond correctly to yes or no questions on topics presented in class.
Emergent	**Eighth grade ELL students performing at the emergent level:** • use correct pronunciation of science words; • use non-verbal communication to express scientific ideas.

Pre-emergent	**Eighth grade ELL students performing at the pre-emergent level:** • observe and model appropriate cultural and learning behaviors from peers and adults; • listen to and observe comprehensible instruction and communicate understanding non-verbally.

Eighth Grade Science, Technology, Environment, and Society
Grade Standards, Supporting Skills, and Examples

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Comprehension)	**8.S.1.1. Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.** **Examples**: GPS, GIS, remote sensing, Corps of Engineers (dams), NOAA (weather satellites), NASA (earth and space exploration), USGS (mapping)

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Bloom's Taxonomy Level	Standard, Supporting Skills, and Examples
(Synthesis)	**8.S.2.1. Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.** **Examples**: global warming, deforestation

Eighth Grade Science, Technology, Environment, and Society
Performance Descriptors

Advanced	**Eighth grade students performing at the advanced level:** • defend a proposed solution or offer alternative solutions to a problem.
Proficient	**Eighth grade students performing at the proficient level:** • describe how science and technology have been influenced by social needs, attitudes, and values; • given a scenario, offer solutions to problems created by human activity on the local, regional, or global environment.
Basic	**Eighth grade students performing at the basic level:** • predict a possible consequence of a solution to a problem.

NATURE OF SCIENCE STANDARDS
6-8

Indicator 1: Understand the nature and origin of scientific knowledge.

Sixth Grade	Seventh Grade	Eighth Grade
		8.N.1.1. (Comprehension) Differentiate among facts, predictions, theory, and laws/principles in scientific investigations.

Indicator 2: Apply the skills necessary to conduct scientific investigations.

Note: These skills should be taught and practiced in grade-level study of Physical, Life, and Earth/Space Science although mastery is not expected at these grade levels.

Sixth Grade	Seventh Grade	Eighth Grade
6.N.2.1 (Application) Pose questions that can be explored through scientific investigations.	7.N.2.1. (Application) Conduct scientific investigations using given procedures.	8.N.2.1. (Synthesis) Design a replicable scientific investigation.

PHYSICAL SCIENCE STANDARDS
6-8

After careful consideration of current research and input from educators throughout the state, the Committee revised former standards to facilitate effective instruction and student mastery. Grade six standards emphasize an integration of Physical, Life, and Earth/Space Science. Grade seven standards emphasize Life Science. Grade eight standards emphasize Earth/Space Science. Nature of Science and Science, Technology, Environment, and Society standards continue to emerge over these grades.

Indicator 1: Describe structures and properties of, and changes in, matter.

Sixth Grade	Seventh Grade	Eighth Grade
6.P.1.1. (Knowledge) Identify the subatomic particles that make up atoms.	*See note above*.	8.P.1.1. (Analysis) Classify matter as elements, compounds, or mixtures.
6.P.1.2. (Application) Classify matter based on physical and chemical properties.		8.P.1.2. (Application) Use the Periodic Table to compare and contrast families of elements and to classify elements as metals, metalloids, or non-metals.
6.P.1.3. (Comprehension) Describe phase changes in matter differentiating between the particle motion in solids, liquids, and gases.		8.P.1.3. (Comprehension) Compare properties of matter resulting from physical and chemical changes.

Indicator 2: Analyze forces, their forms, and their effects on motions.

Sixth Grade:	Seventh Grade:	Eighth Grade:
6.P.2.1. (Comprehension) Describe how push/pull forces acting on an object produce motion.	*See note above*.	*See note above*.

Indicator 3: Analyze interactions of energy and matter.

Sixth Grade:	Seventh Grade:	Eighth Grade:
6.P.3.1. (Comprehension) Identify types of energy transformations.	*See note above.*	*See note above.*

LIFE SCIENCE STANDARDS
6-8

After careful consideration of current research and input from educators throughout the state, the Committee revised former standards to facilitate effective instruction and student mastery. Grade six standards emphasize an integration of Physical, Life, and Earth/Space Science. Grade seven standards emphasize Life Science. Grade eight standards emphasize Earth/Space Science. Nature of Science and Science, Technology, Environment, and Society standards continue to emerge over these grades.

Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Sixth Grade	Seventh Grade	Eighth Grade
6.L.1.1. (Comprehension) Illustrate the difference between plant and animal cells.	7.L.1.1. (Knowledge) Identify basic cell organelles and their functions.	*See note above*.
6.L.1.2. (Comprehension) Explain the importance and scientific use of a classification system.	7.L.1.2. (Comprehension) Identify and explain the function of the human systems and the organs within each system.	
	7.L.1.3. (Application) Classify organisms by using the currently recognized kingdoms.	
	7.L.1.4. (Comprehension) Describe and identify the structure of vascular and non-vascular plants.	

Indicator 2: Analyze various patterns and products of natural and induced biological change.

Sixth Grade	Seventh Grade	Eighth Grade
	7.L.2.1. (Comprehension) Distinguish between processes involved in sexual and asexual reproduction.	*See note above.*

Indicator 3: Analyze how organisms are linked to one another and the environment.

Sixth Grade	Seventh Grade	Eighth Grade
	7.L.3.1. (Application) Predict the effects of biotic and abiotic factors on a species' survival.	*See note above.*

EARTH/SPACE SCIENCE STANDARDS
6-8

After careful consideration of current research and input from educators throughout the state, the Committee revised former standards to facilitate effective instruction and student mastery. Grade six standards emphasize an integration of Physical, Life, and Earth/Space Science. Grade seven standards emphasize Life Science. Grade eight standards emphasize Earth/Space Science. Nature of Science and Science, Technology, Environment, and Society standards continue to emerge over these grades.

Indicator 1: Analyze the various structures and processes of the Earth system.

Sixth Grade	Seventh Grade	Eighth Grade
6.E.1.1. (Comprehension) Describe how the spheres (lithosphere, hydrosphere, atmosphere, and biosphere) of the Earth interact.	*See note above*.	8.E.1.1. (Application) Identify and classify minerals and rocks.
6.E.1.2. (Application) Examine the role of water on the Earth.		8.E.1.2. (Analysis) Explain the role of plate tectonics in shaping Earth.
6.E.1.3. (Comprehension) Explain processes involved in the formation of the Earth's structure.		8.E.1.3. (Analysis) Explain the factors that create weather and the instruments and technologies that assess it.
		8.E.1.4. (Application) Examine the chemical and physical properties of the ocean to determine causes and effects of currents and waves.
		8.E.1.5. (Analysis) Explain the impact of weathering and erosion on the Earth.

Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.

Sixth Grade	Seventh Grade	Eighth Grade
6.E.2.1. (Knowledge) Identify the organization and relative scale of the solar system.	*See note above*.	8.E.2.1. (Analysis) Compare celestial bodies within the solar system using composition, size, and orbital motion.
		8.E.2.2. (Analysis) Differentiate the influences of the relative positions of the Earth, Moon, and Sun.

SCIENCE, TECHNOLOGY, ENVIRONMENT, AND SOCIETY STANDARDS 6-8

Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.

Sixth Grade	Seventh Grade	Eighth Grade
6.S.1.1. (Comprehension) Describe how science and technology have helped society to solve problems.	7.S.1.1. (Comprehension) Describe how science and technology are used to solve problems in different professions and businesses.	8.S.1.1. (Comprehension) Describe how science and technology have been influenced by social needs, attitudes, and values.

Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.

Sixth Grade	Seventh Grade	Eighth Grade
6.S.2.1. (Knowledge) Given a scenario, identify the problem(s) of human activity on the local, regional, or global environment.	7.S.2.1. (Application) Given a scenario, predict the consequence(s) of human activity on the local, regional, or global environment.	7.S.2.1. (Synthesis) Given a scenario, offer solutions to problems created by human activity on the local, regional, or global environment.